



Ø BEAT



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O BEAT



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The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 10 S. Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Phil Somers VE1ARC, 1075 Allegheny Dr., Colorado Springs, CO 80919 . . . 590-7136

EDITORIAL NOTES

After about two years as editor of O-Beat, Frank KL7IPV has moved to Waco, Texas and can no longer provide the club with his time and talent. We wish Frank well in his new endeavors, and thank him for the many, many hours of work he devoted to this newsletter, and for his participation in other club activities.

Well, a newsletter needs an editor, and the club has graciously agreed for yours truly to take on the task. By way of introduction, my name is Phil Somers, VE1ARC. Yes, that's right, it really is a Victor Echo callsign. I have recently arrived in Colorado Springs and serve with NORAD. I was first licensed in 1968. My current interest is computer RTTY, and I hope to try packet in the near future.

If you look up the word "editor" in the dictionary, you will find that it is "one who edits". From past experience, and from talking to Frank, it is evident that an editor of a newsletter like this does considerably more than edit. Well, I knew that before I took the job but at least in this first edition, I would like to solicit the support of all the members of the club to support O-Beat. It represents more than the views of the editor and a few of the regular contributors. The more articles from a whole bunch of members that appear here, the better will be the newsletter, and the club.

There is no danger of having too many articles. There will always be room for the excellent and regular contributions from George N8CIX/O, and from the other regulars. But I would like to see my job become one of "cutting and pasting". Being realistic, I am sure that I'll be doing a bit of inventing articles now and then. I have a word processor, and would be more than happy to edit, copy, re-write or just type any article anyone would like to submit in draft. Hand-written material is just fine as long as I can read most of it. Ideas for articles would also be most welcome. I have some ideas for articles that I will be listing in future newsletters in hope that those in the club with expertise in these areas will use the ideas to create articles.

If you have an article, I am a regular at the club meetings, board meetings, and breakfasts. My address is 1075 Allegheny Dr, Colorado Sp. 80919 and my phone is 590-7136.

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*****
*      Constructive Criticism      *
*                                  *
* If you think the newsletter could *
* be better, how about an article  *
* to illustrate your point.        *
*                                  *
*****

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VIEW FROM THE PEAK
by George Hinds, N8CIX

SOME THINGS NEVER CHANGE

The use of walkie-talkies is on the increase for mobile hams. Perhaps it's to lessen chances of theft? A side effect, however, is the increasing number of contacts that fade away because of dead, or dying, batteries.

How to make batteries last longer? Use proper ID! Too often hams fade away while ID'ing for the 10th time in 10 minutes — needlessly telling each other who they are....Remember: you need only ID your station at the required 10 minute intervals in a contact, and when signing out of the contact. It's not your responsibility to identify others.

Another hint: why add "for ID" when stating your call? For what other reason do you give your call but to identify? O.K., we'll get off that kick for now, but I hope I've provoked some thought. Just because we're amateurs doesn't mean we shouldn't sound professional.

GETTING READY FOR DAYTON HAMVENTION?

Once a year the greatest event in amateur radio in this country occurs: the big blast! in Dayton, Ohio. This year it will be the 25th, 26th and 27th of April.

This year the banquet speaker will again be Jean Shepherd, K2ORS, of radio and TV fame. "Jean Shepherd's America" is regularly shown on PBS. If you are going to be in Dayton, seize this opportunity to see and listen to K2ORS.

You may hear someone say "Dayton is too big" or "Dayton is too crowded" or "Dayton is too far." A hamfest drawing 25,000 hams, some from the far corners of the world, well, you can bet it's worth traveling some distance to attend (and for the full three days, too).

If you make a decision to go but not drive, fast action could get a cheap seat via airline, what with rate wars going on now. As usual, it will be the biggest of all ham radio flea markets (remember, all flea market spaces are only sold in advance so plan accordingly). It's also

your one opportunity to talk to almost every major dealer, distributor or manufacturer serving the amateur market, and to see the newest gear, too. April will be here quicker than you realize, so start taking action now. If you haven't seen the Hamvention, you can't imagine it! If you've been there, you still can't fully believe it!

IT'S TERRIBLE TO BE UNDERPRIVILEGED

Here it is a year now since I've become a permanent fixture in this area; from time to time I have the distinct feeling I've really not made the transition.

You see, I haven't yet bought a pick-up (4-wheel drive, naturally). I watch 'em go by — golly, real hombres in them, too: whiskers, cowboy hats, a box of chewing tobacco on the dash, beer cans bouncing around in the box, a long CB "fishing rod" antenna, a dog with his nose to the wind, a bumper sticker ("Where the Hell is Divide, Colorado?" and "Honk if You Love Jesus" are among the popular ones) and, last but not least, a rifle perched in the rear window rack and an NRA sign.

I've figured out some things. Whiskers make 'em all look alike; snuff or a chew gives 'em a chance to think while they're trying to avoid swallowing that mess; CB is self-explanatory; the beer cans are to throw out along the road to prove they're bigger than the law; the dog just proves he is man's best friend by putting up with his owner, despite the above.

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But I haven't figured out why the rifle? In a year now I haven't seen a bear on the road, let alone chase a pickup; deer always go the other way when we get near, and surely those big 30-30's aren't carried along for squirrel hunting? Evidence points to one use: to shoot up billboards and traffic signs along roads. Having come to that conclusion, you won't find me getting out of the car and standing near billboards or traffic signs.

WHAT A DIFFERENCE TIME MAKES!

Perhaps many of you, like me, did your first flying with the aid of an old three channel NARCO radio several decades ago. Later, along came the 27 channel model with, thank heavens, a "whistle stop" aid for receiver tuning. You could get so busy merely tuning in the tower that the airplane would assume an "unusual" attitude (that's the polite way of saying it would be diving for the ground, or going off in circles). My instructor had a penchant for nudging me in the ribs and admonishing: "Fly the airplane first, talk later." And "remember, that guy in the tower only has to talk, not fly, so let him wait!"

What brought these memories back was seeing ads in a flying magazine the other day for aircraft radios sporting 720 talk frequencies, plus 200 nav frequencies! What a far cry from the old Superhomers. No tuning; Just "click-click." And they come in walkie-talkie models, too!

And, isn't that just about what has transpired in ham rigs? And in just about the same time frame? Remember Hammarlund, Hallicrafters, and the others? I'm not shedding any tears, though... Give me these "super-whizzbang" rigs with all the bells and whistles any day; I, too, want the models with 800 or so frequencies just like the "fly boys."

REPEATER UNCOORDINATION?

Now that states are splitting choices as between 15 and 20 kHz repeater operation, it looks like there will be fun times in the future. For instance, New Mexico has chosen to go 20 kHz. In several other areas there are conflicting plans being implemented in adjoining states. More and more, it looks like we're heading for less coordination, rather than more. In

a different part of 2 meters, a good sign is the fact that packet radio groups are getting together to decide on frequency coordination as 145.01 becomes crowded. In northeast Ohio, my former home, since some folks think 145.01 is too crowded, a tentative decision was reached to have the high-profile linking digipeaters on 145.01, while the local stuff will use other frequencies such as 145.03. To the south at Akron it's 145.05; to the east it's going to probably be 145.07.

"REDDI" IS AT YOUR DISPOSAL - USE IT

Your call to report a drunk driver might keep someone alive - or it might remove a drunk driver from our roads.

Here is a service that ham operators can support with their mobile radio advantage and thus contribute to the safety of themselves and others. REDDI simply is Report Every Drunk Driver Immediately. The Colorado State Patrol, along with other law enforcement agencies, needs help in stopping drunk driving.

Each year in Colorado drunk drivers are at the wheel when up to 400 people die in traffic accidents. Remember, such drivers are indiscriminate killers - anything in their path can be a victim: your friends, your family, YOU. Here are some signs to watch for in other drivers:

Neglects to turn on headlights at night; "super careful" driving as a means to overcome alcohol effects; intense look straight ahead; sits still at green traffic light; stops far short of signal or stops in middle of intersection; tailgating; brakes often with no apparent reason; weaving, crossing center lines or veers off road, and driving with window open in rain, snow, or cold weather.

When you call, or someone calls for you, to report under REDDI, give: location and time of suspected drunk driver; type, color and license plate number; direction of travel. CSP will accept collect calls under REDDI, too.

REDDI is working, for in a year more than 8,000 citizen reports are received and acted upon; thousands of drunk drivers have been caught. With our communication capabilities, amateurs are in a unique position to report under REDDI.

How important and necessary is such a program? Well, in Colorado alone the economic impact of alcohol related fatal accidents is estimated at \$63 million, with injury accidents estimated to be in excess of \$180 million!

The leading cause of death among 15-24 year olds is drunk driving. 60% of all fatal motorcycle accidents involve alcohol impaired drivers.

Amateur Radio is not just a hobby. It is a SERVICE. You can serve thru ham radio by being observant for drunk (or drugged) drivers and by then taking action in line with REDDI to get them off our roads.

73, George N8CIX

LOCAL COMPUTER BULLETIN BOARDS

Colorado Springs Users Group	598-4500
NoChange - Ganss	382-8326
Three Laws - Fido	574-1110
Compurado	593-1072
Computer Farm - Fido	632-0669
RamNet - Fido	598-7667
CSHUG - Fido	598-4662
PC Users Group	635-5468
Naggie's Place - Library	632-2194

This list is by no means complete and possibly not 100% accurate. If anyone can offer a more complete list, especially one containing a summary of the purpose or main interests of computer bulletin boards in the Pikes Peak area, it would probably get printed in O-beat. Another list that might be of interest is a national list of amateur radio bulletin boards.

QSL via Robot

VE3FFW and XL3BPR may be the first Amateurs to exchange QSL cards by robot. They work for the same company, in the same building. The company uses a robot named NT-D2 to deliver mail to its employees. So the two Amateurs put their cards in the mail, and so made this entertaining 'first'.

Tnx: Bill Cousins VE3BPR from TCA Oct 84.

REVIEW: "The Shortwave Guide"

Many hams are also Short Wave Listeners or SWLs and may be interested in a monthly magazine called "The Shortwave Guide". It is for SWLs what "WorldRadio" is for hams. In fact, the format, size and style is the same. The following review is based on the December 1985 issue.

The cover is very attractive with a full color photo of Curacao, future home of Radio Earth. Inside, there are 40 large pages just crammed with the very latest SWL info and interesting advertising. The first section is a full page of 'Mailbag', followed by three pages of 'World Radio News' featuring short articles on numerous international broadcasts. On the next few pages, there are numerous major articles on selected shortwave stations and personalities, as well as a very detailed glossary of SWL terms.

The 'Frequency Section' contains three pages of listings by time, of major international broadcasts and frequencies. The next section called 'Prime Time Shortwave' gives a days-of-the-week list of the major broadcasts in the time 00-08 UTC which is the prime listening period in North America. The most useful section is 10 pages called 'Advanced Program Details' which resembles a TV guide. For every day of the month, a selection of interesting programs are listed, giving the name and a short paragraph describing the content of the program. The final pages contain a review of a SWL receiver, and a listing of unusual radio activity.

Advertising is scattered throughout the magazine, featuring many products of interest to hams and SWLs, such as receivers, scanners, RTTY interfaces, computer interfaces, and numerous books and publications.

Overall, "The Shortwave Guide" is an outstanding and extensive source of the very latest in SWL essential information. If you like "WorldRadio" and you are also an SWL, you will love "The Shortwave Guide". It is published monthly for \$13.95 per year (as of Dec 85) by Lawrence J. Miller Publishing, P.O. Box 691, Thorndale, PA 19372.

Reviewed by: Phil VE1ARC.

Attack of the Computer Virus

By Les Dambart

(downloaded from a public domain BBS)

ern warfare-the deliberate release of
dly bacteria or viruses-is a practice
abhorrent that it has long been
lawed by international treaty. Yet
puter scientists are confronting the
sibility that something akin to germ
fare could be used to disable their
gest machines. In a civilization ever
e dependent on computers, the results
ld be disastrous-the sudden shutdown
air traffic control systems, financial
works, or factories, for example, or
wholesale destruction of government or
iness records.

he warning has been raised by a
versity of Southern California
earcher who first described the problem
September, before two conferences on
puter security. Research by graduate
dent Fred Cohen, 28, shows that it is
sible to write a type of computer
gram, whimsically called a virus, that
infiltrate and attack a computer
tem in much the same way a real virus
ects a human being. Slipped into a
puter by some clever saboteur, the
us would spread throughout the system
le remaining hidden from it's
rators. Then, at some time months or
rs later, the virus would emerge
hout warning to cripple or shut down
infected machine.

he possibility has computer security
erts alarmed because, as Cohen warns,
programming necessary to create the
plest forms of computer virus is not
ticularly difficult. "Viral attacks
ear to be easy to develop in a short
e," he told a conference co-sponsored
the National Bureau of Standards and
Department of Defense. "[They] can be
igned to leave few if any traces in
t current systems, are effective
inst modern security policies, and
ire only minimal expertise to
lement."

Computer viruses are aptly named; they
share several insidious features with
biological viruses. Real viruses burrow
into living cells and take over their
hosts' machinery to make multiple copies
of themselves. These copies escape to
infect other cells. Usually infected cells
die. A computer virus is a tiny computer
program that "infects" other programs in
much the same way. The virus only occupies
a few hundred bytes of memory; a typical
mainframe program, by contrast, takes up
hundreds of thousands. Thus, when the
virus is inserted into an ordinary
program, its presence goes unnoticed by
computer operators or technicians.

Then, each time the "host" program runs,
the computer automatically executes the
instructions of the virus-just as if they
were part of the main program. A typical
virus might contain the following
instructions: "First, suspend execution of
the host program temporarily. Next,
search the computer's memory for other
likely host programs that have not been
already infected. If one is found, insert
a copy of these instructions into it.
Finally, return control of the computer to
the host program."

The entire sequence of steps takes a
half a second or less to complete, fast
enough so that no one will be aware that it
has run. And each newly infected host
program helps spread the contagion each
time it runs, so that eventually every
program in the machine is contaminated.

The virus continues to spread
indefinitely, even infecting other
computers whenever a contaminated program
is transmitted to them. Then, on a
particular date or when certain preset
conditions are met, the virus and all it's
clones go on the attack. After that, each
time an infected program is run, the virus
disrupts the computer's operations by
deleting files, scrambling the memory,
turning off the power, or making other
mischief.

The saboteur need not be around to give
the signal to attack. A disgruntled
employee who was afraid of getting fired,
for example, might plot his revenge i
advance by adding an instruction to his
virus that caused it to remain dormant
only so long as his personal password was

listed in the system. Then, says Cohen, "as soon as he was fired and the password was removed, nothing would work any more."

The fact that the virus remains hidden at first is what makes it so dangerous. "Suppose your virus attacked by deleting files in the system," Cohen says. "If it started doing that right away, then as soon as your files got infected they would start to disappear and you'd say 'Hey, something's wrong here.' You'd probably be able to identify whoever did it." To avoid early detection of the virus, a clever saboteur might add instructions to the virus program that would cause it to check the date each time it ran, and attack only if the date was identical - or later than - some date months or years in the future. "Then," says Cohen, "one day, everything would stop. Even if they tried to replace the infected programs with programs that had been stored on back-up tapes, the back-up copies wouldn't work either - provided the copies were made after the system was infected."

The idea of virus-like programs has been around since at least 1975, when the science fiction writer John Brunner included one in his novel 'The Shockwave Rider'. Brunner's "tapeworm" program ran loose through the computer network, gobbling up computer memory in order to duplicate itself. "It can't be killed," one character in the book exclaims in desperation. "It's indefinitely self-perpetuating as long as the network exists."

In 1980, John Shoch at the Xerox Palo Alto research center devised a real-life program that did somewhat the same thing. Shoch's creation, called a worm, wriggled through a large computer system looking for machines that were not being used and harnessing them to help solve a large problem. It could take over an entire system. More recently, computer scientists have amused themselves with a gladiatorial combat, called Core War, that resembles a controlled viral attack. Scientists put 10 programs in the same computer, each designed to chase the other around the memory, trying to infect and kill the rival.

The problem of viral spread is compounded by the fact that computer users often swap programs with each other, either by shipping them on tape or disk or sending them over a telephone line or through a computer network. Thus, an infection that originates in one computer could easily spread to others over time - a hazard that may be particularly severe for the banking industry, where information is constantly being exchanged by wire. Says Cohen, "The danger is that somebody will write viruses that are bad enough to get around the financial institutions and stop their computers from working."

Many security professionals also find this prospect frightening. Says Jerry Lobel, manager of computer security at Honeywell Information Systems in Phoenix, "Fred came up with one of the more devious kinds of problems against which we have very few defenses at present." Lobel, who organized a recent security conference sponsored by the International Federation for Information Processing - at which Cohen also delivered a paper - cites other potential targets for attacks. "If it were an air traffic control system or a patient monitoring system in a hospital, it would be a disaster."

Marvin Schaefer, chief scientist at the Pentagon's computer security center, says the military has been concerned about penetration by virus-like programs for years. Defense planners have protected some top-secret computers by isolating them, just as a doctor might isolate a patient to keep him from catching cold. The military's most secret computers are often kept in electronically shielded rooms and connected to each other, when necessary, by wires that run through pipes containing gas under pressure. Should anyone try to penetrate the pipes in order to tap into the wires, the drop in gas pressure would immediately give him away. But, Schaefer admits, "in systems that don't have good access controls, there really is no way to contain a virus. It's quite possible for an attack to take over a machine."

Inspired by earlier efforts like these, Cohen took a security course last year, and then set out to test whether viruses could actually do harm to a computer system. He got permission to try his virus at USC on a VAX computer with a Unix operating system, a combination used by many universities and companies. (An operating system is the most basic level of programming in a computer; all other programs use the operating system to accomplish basic tasks like retrieving information from memory, or sending it to a screen.)

In five trial runs, the virus never took more than an hour to penetrate the entire system. The shortest time to full infection was five minutes, the average half an hour. In fact, the trial was so successful that university officials refused to allow Cohen to perform further experiments. Cohen understands their caution, but considers it shortsighted. "They'd rather be paranoid than progressive," he says. "They believe in security through obscurity."

Cohen next got a chance to try out his viruses on a privately owned Univac 1108. (The operators have asked that the company not be identified.) This computer system had an operating system designed for military security; it was supposed to allow people with low-level security clearance to share a computer with people with high-level clearance without leakage of data. But the restrictions against data flow did not prevent Cohen's virus from spreading throughout the system - even though he only infected a single low-security level security user. He proved that military computers, too, may be vulnerable, despite their safeguards.

Honeywell's Lobel strongly believes that neither Cohen nor any other responsible expert should even open a public discussion of computer viruses. "It only takes a halfway decent programmer about half a day of thinking to figure out how to do it," Lobel says. "If you tell enough people about it, there's going to be one crazy enough out there who's going to try."

Cohen disagrees, insisting that it is more dangerous 'not' to discuss and study computer viruses. "The point of these experiments," he says, "is that if I can figure out how to do it, somebody else can too. It's better to have somebody friendly do the experiment, tell you how bad it is, show you how it works and help you counteract it, than to have somebody vicious come along and do it." If you wait for the bad guys to create a virus first, Cohen says, then by the time you find out about it, it will be too late.

W1AW Schedule in MST (Condensed from February QST)

Slow Code Practice

MWF: 7 AM, 8 PM

TThSSn: 2 PM, 8 PM

Fast Code Practice

MWF: 2 PM, 8 PM, 9 PM

TTh: 7 AM

TThSSn: 5 PM

CW Bulletins

Dy: 3 PM, 6 PM, 9 PM

MTWThF: 8 AM

RTTY Bulletins

Dy: 4 PM, 7 PM, 10 PM

MTWThF: 9 AM

SSB Bulletins

Dy: 7:30 PM, 10:30 PM

Frequencies:

CW: 1.818, 3.58, 7.08, 14.07, 21.08, 28.08

RTTY: 3.425, 7.095, 14.095, 21.095, 28.095

SSB: 1.89, 3.99, 7.29, 14.29, 21.39, 28.59

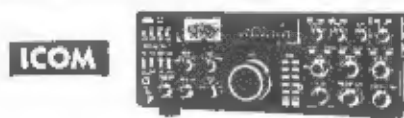


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RTTY - BEAT

This is the O-Beat version of "SAVESDROPPING" in WorldRadio. This is a dedicated 20 meter RTTY as received in Colorado Springs. Contributions by you avid RTTY listeners/operators out there would be appreciated.

THE GEAR STORY...

BUG TRAPS: 20-YR OLD HOMEBREW MAINLINE DRIVING MACHINERY, AEA CP-1 WITH C64 AND MBA-TOR, 328-3, 8B-221, 75A-4, 75B-3B, 2" AND 3" SCOPES,
BIRD RESTB: TH3MK3 UP 23 FEET, GROUND-MOUNTED DIPOLES 40-80M,

THE EQUIPMENT HERE IS THE HAL COMMUNICATIONS PCI 2000 INTERFACE. THE BOARD IS IN THE COMPAG COMPUTER WHICH I USE FOR SOME WORK AT HOME..IT MAKES FOR A NICE NEAT PACKAGE, I JUST ORDERED THE NEW PROGRAM FOR THIS THING SINCE HAL HAS REVISED THE SOFTWARE TO IMPROVE THE OPERATION WHICH I THOUGHT WAS PRETTY GOOD..HOWEVER THE NEW PROGRAM WILL DO A FEW EXTRA THINGS AND MAKE THE UNIT CLOSE TO THEIR DB 3100 UNIT

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11:00 - 11:15 MST	3.566	CW
11:30 - 11:45 MST	3.866	SSB
12:00 - 12:15 MST	7.066	CW
12:30 - 12:45 MST	7.266	SSB
13:00 - 13:15 MST	14.066	CW
13:30 - 13:45 MST	14.266	SSB
14:00 - 14:15 MST	21.066	CW
14:30 - 14:45 MST	21.266	SSB
15:00 - 15:15 MST	7.066	CW
15:30 - 15:45 MST	7.266	SSB
16:00 - 16:15 MST	3.566	CW
16:30 - 16:45 MST	3.866	SSB

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S55-IC.AQC		S55 timer calculations
ANTLOAD.AQC		Antenna loading
DIPOLE.AQC		Dipole antenna sizing
HAMI.BQB		misc HAM calcs
HAMCALC.AQC	" "	" "
HAMHELP.AQC	" "	" "
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MINIMUF1.BQS		Min frequency for distance
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SATELITE.LBR		Track Ham Sat/Shuttle Graph
SAT-MAP.LBR		Display SSTV weather Sat
SSTV.EXE		SSTV ON IBM-PC-NO HARDWARE!!
SSTV.ARC		SSTV.BAS SSTV.EXE and DDC
SATDESIGN.BAS		helps design home sat dish

MARCH MEETING

The next regularly scheduled meeting of the Pikes Peak Radio Amateur Association will be held on Wednesday, March 12 at 7:30 PM at Giuseppe's Depot at #10 S. Sierra St. The double program will feature talks on astronomy and power supplies. An election will be held to fill a vacant Board Member position.

* C-O-N-G-R-A-T-U-L-A-T-I-O-N-S *

* VE Test Results 22 February 1986 *

Name	Call	Upgraded to
Edward Villacres		Novice
Marek Frydrych		Technician
Charles Todd	KA0ATO	Technician
Michael Haase	N0BBT	General
Carol Huston	KA0ULV	General
Charles Hadden	N0FDC	Advanced
Eugene Ridge	K7MPE	Advanced
Dwight DeWitt	WB0HBJ	Extra
Lester Snowden	N8AVN	Extra
Charles Woodruff	K0WVB	Extra

MINUTES OF FEBRUARY GENERAL MEETING

The general meeting of the Pikes Peak Radio Amateur Association was held on 13 February 1986 at Giuseppe's. The meeting was called to order by Les KCONC at 1930 MST. The minutes of the last meeting were approved as printed in O-Beat.

Treasure's Report:

Last Month	\$1645.54
Income	713.50
Expenses	303.00
Balance as of 13 Feb	\$2056.04

Committee Reports

RFI - Ron NKOP: Nothing new. SwapFest will be May 17 at Rustic Hills Mall. Everything shaping up well.

Hill Climb - Doc WOMCT: Pikes Peak Hill Climb wants our help again. Club needs a chairman for this participation. Teller County Hill Climb is 31 May - 1 Jun. Need about 8 more volunteers. Contact Doc if you can help in the Teller County event.

Public Service - Mike KOTER: Walk for Mankind on Apr 12.

Education - Frank KL7IPV: Nothing. O-Beat needs a new editor because Frank is leaving town.

CCARE - Bud NODDF: Nothing.

Deaf and Blind School - Jim WA9ABB: Novice classes doing fine.

Other: Karl WBOYED requested help for a demo on Mar 1 at Fountain Valley School.

Old Business: None.

New Business: None.

Continuation of HomeBrew Night

Ken WA6TTY	- 150mw 40m transceiver.
Lauren KX00	- 1500 watt 6m amplifier.
Larry NOAMP	- 2m H.T. charger.
Ron NKOP	- 2m gas fet pre-amp.
James N4HCJ	- 40m transceiver.
Ray AAOL	- 1296 transverter
	- Kilowatt 2m amplifier.

First Prize:	Ray AAOL
Second Prize:	Ken WA6TTY
Third Prize:	Lauren KX00

New Editor: Phil VE1ARC volunteered and was accepted as the new editor of O-Beat.

Guest Speaker. Ray AAOL spoke on the topic "The Ham and his Environment". It was an excellent topic, evoking much discussion and participation.

MINUTES OF FEBRUARY BOARD MEETING

The board meeting was held at 1900 on 17 Feb 1986 at the home of Al NOCMW. Those in attendance were Les KCONC, Al NOCMW, Don WBOHWS, Bud NODDF, Jake NOCYR, Jim WA9ABB, Dak KOROL, Ken WA6TTY, Ken NOFRQ and Phil VE1ARC.

The SwapFest committee was allocated \$500.00. Raffle tickets will be \$1.00 or 12 for \$10.00. Tables will be \$8.00 in advance and \$10.00 at the door. Five or more tables will be \$6.00 each. Contact Jim WA9ABB or Ron NKOP.

Ken NOFRQ brought a proposition to the club about a possible combined future meeting site and club station. The board will follow through on this proposal.

Les will talk to a few members about becoming Education Chairman. Board has recommended WA9ABB as a board member to replace Frank KL7IPV who has resigned. Nominations will be open from the floor and a vote will be conducted at the next meeting.

Tentative programs for the general meetings are: March - Astronomy, April - FCC, May - Weather, June - Field Day.

The next board meeting will be at the home of Les KCONC.

*	GATEWAY ELECTRONICS	*
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*	Call 458-544 for info/directions	■
■		*

MILEY'S RADIO

less KOTAA 719 W. 7th St. Florence, Colorado 81226 784-3040
Hours 8 to 6 Tuesday through Friday — Saturdays 8 to 12 — Evening Hours 7:30 to 9 (Call Ahead)
Closed Saturday PM, Sunday & Monday
Closed 3/13-3/17 for Midland TX Hamfest, 4/3-4/7 for Kearney, NE
Closed Saturday March 22 for VE Testing

NEW EQUIPMENT IN STOCK

Coming Soon! New Kenwood TS 440S \$819 w/AT installed \$949.
Kenwood TS 940S \$1549 w/auto tuner \$1695.
Kenwood TS 930S Sale \$1249 w/auto tuner \$1399.
Kenwood TS 430S w/free mike & FM board \$699.
Kenwood TS 830S \$779. — TS 130 SE \$555.
PS 430 Power Supply \$134. — PS 30 \$125.
Kenwood AT 230 auto antenna tuner for 430S \$290.
Kenwood AT 130 tuner \$125 AT 230 Tuner \$170.
New Icom 735 \$710.
Icom 745 \$765.
Yaesu FT 757GX \$699.
New "Amp Supply" LA 1000NT 160-15 meter 1200W PEP-800 DC QSK, no tune up, drives with 100W-list \$529 - SALE \$475.
Amp Supply LK500ZB w/o QSK in stock w/10 meters \$950.
Kenwood 4000A 2m & 440 FM Xcvr. List \$699 Sale \$499 w/free tone encoder.
Kenwood TR-7950 45W 11m \$499 - Sale \$399.
Kenwood 7930 \$314.
Kenwood TR 3600 440 MHz HT. \$305.
Kenwood TR 2600A New HT. \$290 with free extra battery.
New Kenwood TH21AT \$198. TH41AT \$209 — both with free extra battery.
Kenwood TM 2570A 70 watt 2 meter FM mobile \$479.
Kenwood TM 2550A 45 watt 2 meter FM mobile \$389.
Kenwood TM 2530A 25 watt 2 meter FM mobile \$349.
Santec 200 ET 2mtr. HT w/soft case, mobile charger & speaker mike \$195.
Santec 400 ET 440 HT, same accessories as 200 ET \$215.
Santec 20T w/2 number memory dialer \$285.
Complete line of Tokyo High Power amps, preamps & tuners at lowest prices.
New Arden PCS 5000 \$285.
Icom 2AT HT. Reg. \$269 Now \$198.
Icom 62AT \$289.
Icom 4AT \$229.
Icom 64AT \$325.
Icom 27A \$328/Icom 27H \$158.
Icom 47A \$398.
Icom 3200 2 meter/440 dual bander \$485.
Daiwa Meters, Switches & Rotors - In Stock.
Mirage Amps - Low Prices.
New KDK FM 240 mini 25W w/TIM & LCD display, encoder/decoder \$295.
New Yaesu FT 209RH 5 watt FM HT \$289.
Yaesu FT 2700RH 2 m-70 cm dual bander full duplex-free encoder \$489 - 1 only.
Now a factory dealer for Ten Tec — In stock specials:
Consist II HF xcvr. \$1125.
Argosy II HF xcvr. \$559.
Century 22 HF CW xcvr. 349.
KR1B dual paddle memory keyer \$54.
New generation Ten Tec 2351 2 m HT \$249 - 2 only.
Astron PS — ALL AMPS — Low Prices.
Butternut HF6V 80-10 mtr. vertical \$115. 160 mtr. adapter \$50.
Welz test meters in stock.
Now a distributor for Amarrtron Amplifiers - AL 80A in stock.
AEA CP-1 Computer Interface \$210.
AEA PK 64 packet/cw/rty etc. controller \$199 — HF/M \$90.
AEA PK 64 system w/HFM 64 installed \$295.
Factory Dealer for Kantronics — In Stock!
Kantronics Packet Controller version 2 w/HFM \$195.
Kantronics interface for VIC 20 and others \$125.
Kantronics Universal Terminal Unit \$165.
Kantronic Hamtext Hamsoft \$89.
MFJ wet & dry dummy loads — In stock.
MFJ Tuners and Keyers — In stock.
MFJ 962 1.5 KW tuner-160 to 10 meters \$219.
New MFJ 1224 interface in stock w/free soft program \$90.
MFJ 1229 interface w/free soft program \$160.
Available Mid February-MFJ 1270 packet controller (TNC-2) clone \$125.

USED EQUIPMENT

Kenwood TR 2400 - nice, in box \$125.
Kenwood TR 2500 \$195.
Kenwood TR 3500 \$225.
Kenwood TR 3600 - like new \$275.
Kenwood TR 7950 \$275.
Kenwood TR 7800 \$150.
Kenwood VFO 230 \$165.
Kenwood TS 930S w/AT - mint in box \$1125.
Kenwood TS 430S w/AM, CW & SSB filters \$395.
Kenwood PS 30 power supply \$100.
KDK 2033 \$185 KDK 2025 \$160.
Icom 2AT \$150.
Icom 4AT Demo \$195.
Icom 730 \$425.
Icom PS 15 power supply \$95.
(IC 730 & PS 15 combo for \$900).
Sentec ST 142 2 mtr. HT - mini \$200.
Arden PCS 2000 \$150.
Tempo 54 \$150.
Tempo 51 \$125.
KLM Multi 2000 - 2/10 meter oscar all-mode \$225.
KLM 2-140 2 meter FM only amp. 2 in/140 out \$135.
KLM PA 10-40 2 mtr. amp. 10 in, 40 out \$55.
KLM PA 10-35/C 440 FM amp. 5-15 in, 35 out \$65.
VHF Engineering 10/140W 2 meter amp \$95.
AEA CPT/64 w/MBA TextPac \$150.
Heath SB 102 80-10 meters with p.s./spkr \$225.
Heath DX 60 cw/am transmitter w/HG10B VFO w/5 & 2 meters.
Like new - will not separate \$85.
Heath SB 401 Transmitter \$95.
Heath HW 12 w/AC supply-Nice condition \$90.
Yaesu FC 757 AT automatic antenna tuner \$175.
Yaesu FL 110 HF mobile amp - 20/150 watts \$150.
Tokyo Hi Power 400L 500W tuner - 160-10 meters \$150.
Ten Tec Argosy 100W or QRP w/circuit breaker \$325.
Drake T4XB, R4B, w/5 4 ps/spkr \$250.
Swan 350 - nice shape w/p.s., spkr. \$150.
Kenpro KR 400 rotor and controller \$65.
Sony ICF 2001 general coverage receiver \$150.
Radio Shack Color Computer II w/cassette \$125.
Radio Shack ink jet graphics printer \$125.
Wide selection of amateur antennas-base, mobile, HF, VHF, UHF at reduced prices. We stock most of the better antenna companies products.
We carry a complete selection of books by ARRL, Ameco, and the Callbook.
New 86 ARRL Handbooks - list \$18 - sale \$17, limited qty.
New 86 Callbooks \$1.95 off cover price.
"We handle anything electronic and love to trade"
Much more used & consignment gear — call for info
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Membership Application

PIKES PEAK RADIO AMATEUR ASSOCIATION

Name _____

Address _____

City _____ State _____ Zip _____

Call _____ License Class _____

Are You An ARRL Member? ☐ Yes ☐ No Telephone _____

Full Member \$12.00 ☐

Family Membership \$15.00 ☐

Additional Names _____ Calls _____

Associate Member \$8.00 ☐ (Outside Teller & El Paso Counties.)